

Executive Summary

A. Conclusions of the Commission

The Commission was directed to assess the organization and management of space activities in support of U.S. national security. Members of the Commission were appointed by the chairmen and ranking minority members of the House and Senate Armed Services Committees and by the Secretary of Defense in consultation with the Director of Central Intelligence.

The Commission unanimously concluded that the security and well being of the United States, its allies and friends depend on the nation's ability to operate in space.

Therefore, it is in the U.S. national interest to:

- Promote the peaceful use of space.
- Use the nation's potential in space to support its domestic, economic, diplomatic and national security objectives.
- Develop and deploy the means to deter and defend against hostile acts directed at U.S. space assets and against the uses of space hostile to U.S. interests.

The pursuit of U.S. national interests in space requires leadership by the President and senior officials. The Commission recommends an early review and, as appropriate, revision of the national space policy. The policy should provide direction and guidance for the departments and agencies of the U.S. Government to:

- Employ space systems to help speed the transformation of the U.S. military into a modern force able to deter and defend against evolving threats directed at the U.S. homeland, its forward deployed forces, allies and interests abroad and in space.
- Develop revolutionary methods of collecting intelligence from space to provide the President the information necessary for him to direct the nation's affairs, manage crises and resolve conflicts in a complex and changing international environment.

- Shape the domestic and international legal and regulatory environment for space in ways that ensure U.S. national security interests and enhance the competitiveness of the commercial sector and the effectiveness of the civil space sector.
- Promote government and commercial investment in leading edge technologies to assure that the U.S. has the means to master operations in space and compete in international markets.
- Create and sustain within the government a trained cadre of military and civilian space professionals.

The U.S. Government is increasingly dependent on the commercial space sector to provide essential services for national security operations. Those services include satellite communications as well as images of the earth useful to government officials, intelligence analysts and military commanders. To assure the United States remains the world's leading space-faring nation, the government has to become a more reliable consumer of U.S. space products and services and should:

- Invest in technologies to permit the U.S. Government to field systems one generation ahead of what is available commercially to meet unique national security requirements.
- Encourage the U.S. commercial space industry to field systems one generation ahead of international competitors.

The relative dependence of the U.S. on space makes its space systems potentially attractive targets. Many foreign nations and non-state entities are pursuing space-related activities. Those hostile to the U.S. possess, or can acquire on the global market, the means to deny, disrupt or destroy U.S. space systems by attacking satellites in space, communications links to and from the ground or ground stations that command the satellites and process their data. Therefore, the U.S. must develop and maintain intelligence collection capabilities and an analysis approach that will enable it to better understand the intentions and motivations as well as the capabilities of potentially hostile states and entities.

An attack on elements of U.S. space systems during a crisis or conflict should not be considered an improbable act. If the U.S. is to avoid a "Space Pearl Harbor" it needs to take seriously the possibility of an attack on U.S.

space systems. The nation's leaders must assure that the vulnerability of the United States is reduced and that the consequences of a surprise attack on U.S. space assets are limited in their effects.

The Commission has unanimously concluded that organizational and management changes are needed for the following reasons.

First, the present extent of U.S. dependence on space, the rapid pace at which this dependence is increasing and the vulnerabilities it creates, all demand that U.S. national security space interests be recognized as a top national security priority. The only way they will receive this priority is through specific guidance and direction from the very highest government levels. Only the President has the authority, first, to set forth the national space policy, and then to provide the guidance and direction to senior officials, that together are needed to ensure that the United States remains the world's leading space-faring nation. Only Presidential leadership can ensure the cooperation needed from all space sectors—commercial, civil, defense and intelligence.

Second, the U.S. Government—in particular, the Department of Defense and the Intelligence Community—is not yet arranged or focused to meet the national security space needs of the 21st century. Our growing dependence on space, our vulnerabilities in space and the burgeoning opportunities from space are simply not reflected in the present institutional arrangements. After examining a variety of organizational approaches, the Commission concluded that a number of disparate space activities should promptly be merged, chains of command adjusted, lines of communication opened and policies modified to achieve greater responsibility and accountability. Only then can the necessary trade-offs be made, the appropriate priorities be established and the opportunities for improving U.S. military and intelligence capabilities be realized. Only with senior-level leadership, when properly managed and with the right priorities will U.S. space programs both deserve and attract the funding that is required.

Third, U.S. national security space programs are vital to peace and stability, and the two officials primarily responsible and accountable for those programs are the Secretary of Defense and the Director of Central Intelligence. Their relationship is critical to the development and deployment of the space capabilities needed to support the President in war, in crisis and also in peace. They must work closely and effectively together, in partnership, both to set and maintain the course for national security space programs and to resolve the differences that arise between their respective bureaucracies. Only if they do so will the armed forces, the Intelligence Community and the National Command Authorities have the information they need to pursue our deterrence and defense objectives successfully in this complex, changing and still dangerous world.

Fourth, we know from history that every medium—air, land and sea—has seen conflict. Reality indicates that space will be no different. Given this virtual certainty, the U.S. must develop the means both to deter and to defend against hostile acts in and from space. This will require superior space capabilities. Thus far, the broad outline of U.S. national space policy is sound, but the U.S. has not yet taken the steps necessary to develop the needed capabilities and to maintain and ensure continuing superiority.

Finally, investment in science and technology resources—not just facilities, but people—is essential if the U.S. is to remain the world’s leading space-faring nation. The U.S. Government needs to play an active, deliberate role in expanding and deepening the pool of military and civilian talent in science, engineering and systems operations that the nation will need. The government also needs to sustain its investment in enabling and breakthrough technologies in order to maintain its leadership in space.

B. Space: Today and the Future

With the dramatic and still accelerating advances in science and technology, the use of space is increasing rapidly. Yet, the uses and benefits of space often go unrecognized. We live in an information age, driven by needs for precision, accuracy and timeliness in all of our endeavors—personal, business and governmental. As society becomes increasingly mobile and global, reliance on the worldwide availability of

information will increase. Space-based systems, transmitting data, voice and video, will continue to play a critical part in collecting and distributing information. Space is also a medium in which highly valuable applications are being developed and around which highly lucrative economic endeavors are being built.

1. A New Era of Space

The first era of the space age was one of experimentation and discovery. Telstar, Mercury and Apollo, Voyager and Hubble, and the Space Shuttle taught Americans how to journey into space and allowed them to take the first tentative steps toward operating in space while enlarging their knowledge of the universe. We are now on the threshold of a new era of the space age, devoted to mastering operations in space.

The Role for Space

Space-based technology is revolutionizing major aspects of commercial and social activity and will continue to do so as the capacity and capabilities of satellites increase through emerging technologies. Space enters homes, businesses, schools, hospitals and government offices through its applications for transportation, health, the environment, telecommunications, education, commerce, agriculture and energy. Much like highways and airways, water lines and electric grids, services supplied from space are already an important part of the U.S. and global infrastructures.

Space-related capabilities help national leaders to implement American foreign policy and, when necessary, to use military power in ways never before possible. Because of space capabilities, the U.S. is better able to sustain and extend deterrence to its allies and friends in our highly complex international environment.

In the coming period, the U.S. will conduct operations to, from, in and through space in support of its national interests both on the earth and in space. As with national capabilities in the air, on land and at sea, the U.S. must have the capabilities to defend its space assets against hostile acts and to negate the hostile use of space against U.S. interests.

Intelligence collected from space remains essential to U.S. national security. It is essential to the formulation of foreign and defense policies, the capacity of the President to manage crises and conflicts, the conduct of

military operations and the development of military capabilities to assure the attainment of U.S. objectives. The Department of Defense and the Intelligence Community are undertaking substantial and expensive programs to replace virtually their entire inventory of satellites over the next decade or so. These programs are estimated to cost more than \$60 billion during this period.

Opportunities in space are not limited to the United States. Many countries either conduct or participate in space programs dedicated to a variety of

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tasks, including communications and remote sensing. The U.S. will be tested over time by competing programs or attempts to restrict U.S. space activities through international regulations.

Toward the Future

Mastering near-earth space operations is still in its early stages. As mastery over operating in space is achieved, the value of activity in space will grow. Commercial space activity will become increasingly important to the global economy. Civil activity will involve more nations, international consortia and non-state actors. U.S. defense and intelligence activities in space will become increasingly important to the pursuit of U.S. national security interests.

The Commissioners appreciate the sensitivity that surrounds the notion of weapons in space for offensive or defensive purposes. They also believe, however, that to ignore the issue would be a disservice to the nation. The Commissioners believe the U.S. Government should vigorously pursue the capabilities called for in the National Space Policy to ensure that the President will have the option to deploy weapons in space to deter threats to and, if necessary, defend against attacks on U.S. interests.

2. Vulnerabilities and Threats

Space systems are vulnerable to a range of attacks that could disrupt or destroy the ground stations, launch systems or satellites on orbit. The political, economic and military value of space systems makes them attractive targets for state and non-state actors hostile to the United States and its interests. In order to extend its deterrence concepts and defense

capabilities to space, the U.S. will require development of new military capabilities for operation to, from, in and through space. It will require, as well, engaging U.S. allies and friends, and the international community, in a sustained effort to fashion appropriate “rules of the road” for space.

Assessing the Threat Environment

The U.S. is more dependent on space than any other nation. Yet, the threat to the U.S. and its allies in and from space does not command the attention it merits from the departments and agencies of the U.S. Government charged with national security responsibilities. Consequently, evaluation of the threat to U.S. space capabilities currently lacks priority in the competition for collection and analytic resources. Failure to develop credible threat analyses could have serious consequences for the United States. It could leave the U.S. vulnerable to surprises in space and could result in deferred decisions on developing space-based capabilities due to the lack of a validated, well-understood threat.

The ability to restrict or deny freedom of access to and operations in space is no longer limited to global military powers. Knowledge of space systems and the means to counter them is increasingly available on the international market. The reality is that there are many extant capabilities to deny, disrupt or physically destroy space systems and the ground facilities that use and control them. Examples include denial and deception, interference with satellite systems, jamming satellites on orbit, use of microsatellites for hostile action and detonation of a nuclear weapon in space.

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Reducing Vulnerability

As harmful as the loss of commercial satellites or damage to civil assets would be, an attack on intelligence and military satellites would be even more serious for the nation in time of crisis or conflict. As history has shown—whether at Pearl Harbor, the killing of 241 U.S. Marines in their barracks in Lebanon or the attack on the USS Cole in Yemen—if the U.S. offers an inviting target, it may well pay the price of attack. With the growing commercial and national security use of space, U.S. assets in space and on the ground offer just such targets. The U.S. is an attractive candidate for a “Space Pearl Harbor.” The warning signs of U.S. vulnerability include:

- In 1998, the Galaxy IV satellite malfunctioned, shutting down 80 percent of U.S. pagers, as well as video feeds for cable and broadcast transmissions. It took weeks in some cases to fully restore satellite service.
- In early 2000, the U.S. lost all information from a number of its satellites for three hours when computers in ground stations malfunctioned.
- In July 2000, the Xinhua news agency reported that China's military is developing methods and strategies for defeating the U.S. military in a high-tech and space-based future war.

The signs of vulnerability are not always so clear as those described above and therefore are not always recognized. Hostile actions against space systems can reasonably be confused with natural phenomena. Space debris

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or solar activity can "explain" the loss of a space system and mask unfriendly actions or the potential thereof. Such ambiguity and uncertainty could be fatal to the successful management of a crisis or resolution of a conflict. They could lead to forbearance when action is needed or to hasty action when more or better information would have given rise to a broader and more effective set of response options.

There are a number of possible crises or conflicts in which the potential vulnerability of national security space systems would be worrisome. For example:

- Efforts to identify and strike terrorist strongholds and facilities in advance of or in retaliation for terrorist attacks on U.S. forces or citizens abroad, or on the U.S. homeland or that of its allies.
- Conflict in the Taiwan Straits, in which the U.S. attempts to deter escalation through the conduct of military operations while seeking to bring it to a favorable end through diplomatic measures.
- War in the Middle East, posing a threat to U.S. friends and allies in the region and calling for a rapid political and military response to threats by an aggressor to launch ballistic missiles armed with weapons of mass destruction.

That U.S. space systems might be threatened or attacked in such contingencies may seem improbable, even reckless. However, as political economist Thomas Schelling has pointed out, “There is a tendency in our planning to confuse the unfamiliar with the improbable. The contingency we have not considered looks strange; what looks strange is thought improbable; what is improbable need not be considered seriously.” Surprise is most often not a lack of warning, but the result of a tendency to dismiss as reckless what we consider improbable.

We are on notice, but we have not noticed.

History is replete with instances in which warning signs were ignored and change resisted until an external, “improbable” event forced resistant bureaucracies to take action. The question is whether the U.S. will be wise enough to act responsibly and soon enough to reduce U.S. space vulnerability. Or whether, as in the past, a disabling attack against the country and its people—a “Space Pearl Harbor”—will be the only event able to galvanize the nation and cause the U.S. Government to act.

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C. U.S. Objectives for Space

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America’s interests in space are to:

- Promote the peaceful use of space.
- Use the nation’s potential in space to support U.S. domestic, economic, diplomatic and national security objectives.
- Develop and deploy the means to deter and defend against hostile acts directed at U.S. space assets and against the uses of space hostile to U.S. interests.

The U.S. Government must work actively to make sure that the nation has the means necessary to advance its interests in space. This requires action in the following areas.

1. Transform U.S. Military Capabilities

A deterrence strategy for space...must be supported by a greater range of space capabilities.

The United States must develop, deploy and maintain the means to deter attack on and to defend vulnerable space capabilities. Explicit national security guidance and defense policy is needed to

direct development of doctrine, concepts of operations and capabilities for space, including weapons systems that operate in space and that can defend assets in orbit and augment air, land and sea forces. This requires a deterrence strategy for space, which in turn must be supported by a broader range of space capabilities. Improvements are needed in the areas of:

- Assured access to space and on-orbit operations.
- Space situational awareness.
- Earth surveillance from space.
- Global command, control and communications in space.
- Defense in space.
- Homeland defense.
- Power projection in, from and through space.

The senior political and military leadership needs to test these capabilities in exercises on a regular basis. Exercises, including “live fire” events, are needed both to keep the armed forces proficient in the use of these capabilities and to bolster their deterrent effect on potential adversaries. While exercises may give adversaries information they can use to challenge American space capabilities, that risk must be balanced against the fact that capabilities that are untested, unknown or unproven cannot be expected to deter.

2. Strengthen Intelligence Capabilities

The U.S. needs to strengthen its ability to collect information about the activities, capabilities and intentions of potential adversaries and to overcome their efforts to deny the U.S. this information. Since the end of the Cold War, the number, complexity and scope of high-priority tasks assigned to the Intelligence Community have increased even as its human resources and technical advantage have eroded. This has reduced the Intelligence Community's ability to provide timely and accurate estimates of threats and has correspondingly increased the possibility of surprise.

To meet the challenges posed to space-based intelligence collection, the U.S. needs to review its approach to intelligence collection from space. Planned and programmed collection platforms may not be adaptable enough to meet the many and varied tasks assigned. To the extent that commercial products, particularly imagery from U.S. commercial remote sensing companies, can meet intelligence collection needs, these should be incorporated into an overall collection architecture. The U.S. must also invest in space-based collection technologies that will provide revolutionary methods for collecting intelligence.

3. Shape the International Legal and Regulatory Environment

U.S. activity in space, both governmental and commercial, is governed by treaties and by international and domestic law and regulations, which have contributed to the orderly use of space by all nations. As interest in and use of space increases, both

within the United States and around the world, the U.S. must participate actively in shaping the space legal and regulatory environment. To protect the country's interests, the U.S. must promote the peaceful use of space, monitor activities of regulatory bodies, and protect the rights of nations to defend their interests in and from space. The U.S. and most other nations interpret "peaceful" to mean "non-aggressive"; this comports with customary international law allowing for routine military activities in outer space, as it does on the high seas and in international airspace. There is no blanket prohibition in international law on placing or using weapons in space, applying force from space to earth or conducting military operations in and through space. The U.S. must be cautious of agreements intended

The U.S. must participate actively in shaping the space legal and regulatory environment.

for one purpose that, when added to a larger web of treaties or regulations, may have the unintended consequences of restricting future activities in space.

4. Advance U.S. Technological Leadership

To achieve national security objectives and compete successfully internationally, the U.S. must maintain technological leadership in space. This requires a healthy industrial base, improved science and technology resources, an attitude of risk-taking and innovation, and government policies that support international competitiveness. In particular, the government needs to significantly increase its investment in breakthrough technologies to fuel innovative, revolutionary capabilities. Mastery of

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space also requires new approaches that reduce significantly the cost of building and launching space systems. The U.S. will not remain the world's leading space-faring nation by relying on yesterday's technology to meet today's requirements at tomorrow's prices.

5. Create and Sustain a Cadre of Space Professionals

Since its inception, a hallmark of the U.S. space program has been world-class scientists, engineers and operators from academic institutions, industry, government agencies and the military Services. Sustained excellence in the scientific and engineering disciplines is essential to the future of the nation's national security space program. It cannot be taken for granted.

Military space professionals will have to master highly complex technology; develop new doctrine and concepts of operations for space launch, offensive and defensive space operations, power projection in, from and through space and other military uses of space; and operate some of the most complex systems ever built and deployed. To ensure the needed talent and experience, the Department of Defense, the Intelligence Community and the nation as a whole must place a high priority on intensifying investments in career development, education and training to develop and sustain a cadre of highly competent and motivated military and civilian space professionals.

D. Organizations that Affect National Security Space

The principal organizations involved in national security space include the Executive Office of the President, the Department of Defense, the Intelligence Community and the Congress (Figure 1).

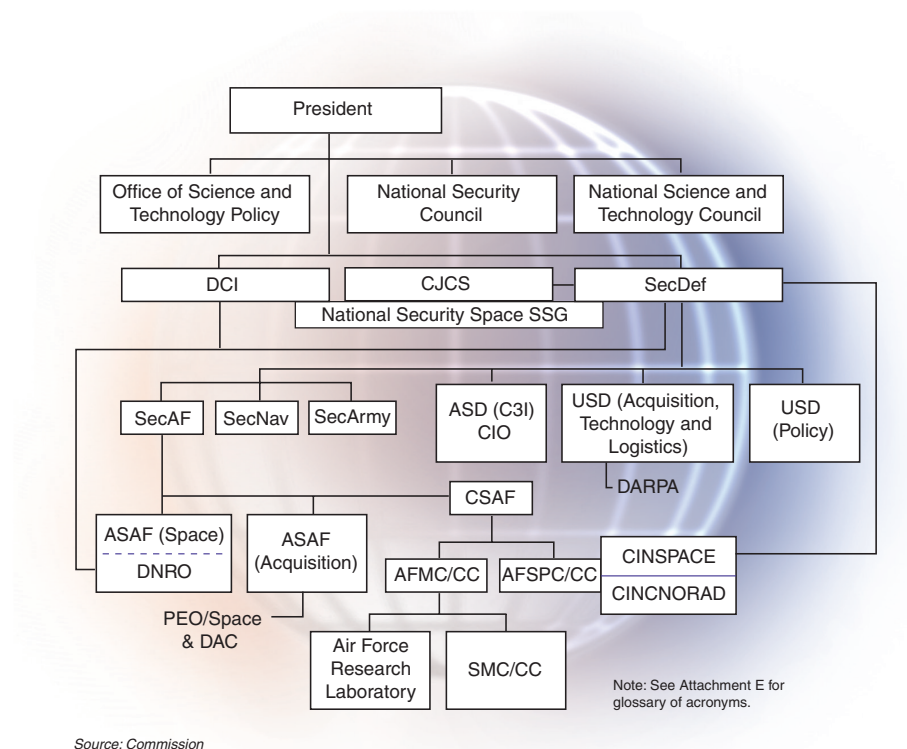


Figure 1: Current Organization for Managing US National Security Space Activity

1. Executive Office of the President

There is no single individual other than the President who can provide the sustained and deliberate leadership, direction and oversight of national security space policy that is needed. Currently, responsibility and accountability for space are broadly diffused throughout the government.

The 1996 National Space Policy designates the National Science and Technology Council (NSTC), a Cabinet-level organization chaired by the President, as “the principal forum for resolving issues related to national space policy.” The policy directs that, “as appropriate, the NSTC and NSC [National Security Council] will co-chair policy processes.” In the National Security Council, national security space issues are currently assigned to the Senior Director for Defense Policy and Arms Control.

This arrangement has not, does not and cannot provide the focused attention to space matters that is needed. The interdependence of the space sectors requires a more concentrated focus on space at the Cabinet level. The distribution of responsibility for space activity among many departments and agencies is less than ideal. Moreover, the portfolio of the Senior Director with responsibility for space affairs on the NSC is broad. That combined with a lack of staff support means that space issues are selectively addressed, most frequently only when they have become crises.

2. Department of Defense

Secretary of Defense

Title 10 of the U.S. Code, which provides the statutory basis for the Armed Services, assigns the Secretary of Defense as the principal assistant to the President in all matters relating to the Department of Defense. The Secretary has “authority, direction, and control” over the Department. With respect to those elements of the Intelligence Community within the Department, Title 50 U.S.C. provides the statutory basis for the Intelligence Community and directs that the Secretary, in consultation with the Director of Central Intelligence (DCI), “shall...ensure that [their] budgets are adequate...[and] ensure appropriate implementation of the policies and resource decisions of the Director of Central Intelligence by [those] elements...” This dual tasking establishes the obligation for the Secretary of Defense to ensure that the missions of the Department of Defense and of the Intelligence Community are successfully completed.

The relationship between the Secretary of Defense and the Director of Central Intelligence has evolved over time in such a manner that national security space issues do not receive the sustained focus appropriate to their importance to national security.

Office of the Secretary of Defense

Except for responding to urgent programmatic decisions, defense secretaries have generally delegated management of national security space activities. Today, this responsibility is delegated to the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD (C3I)), who serves as the “principal staff assistant and advisor to the Secretary and Deputy Secretary of Defense and the focal point within the Department for space and space-related activities.” The ASD (C3I) in turn relies on deputy assistant secretaries to guide policy and acquisition and provide oversight of the Department’s intelligence, surveillance, reconnaissance, information, command, control, communications and space programs.

The current ASD (C3I) organization suffers from three difficulties:

- The span of control is so broad that only the most pressing issues are attended to and space matters are left, on a day-to-day basis, in the hands of middle-level officials without sufficient influence within the Department and the interagency arena.
- Its influence on the planning, programming and budgeting process for space is too far removed or too late to have substantial effect on either the Services’ or the Intelligence Community’s processes.
- Within this structure it is not possible for senior officials outside DoD to identify a single, high-level individual who has the authority to represent the Department on space-related matters.

Commander in Chief of U.S. Space Command and North American Aerospace Defense Command and Commander, Air Force Space Command

The Commander in Chief, U.S. Space Command (CINCSPACE) serves as the Commander in Chief, North American Aerospace Defense Command (CINCNORAD) and as the Commander, Air Force Space Command. As CINCSPACE, he serves as the advocate for the space requirements for all the CINCs and, on an annual basis, submits to the Chairman of the Joint Chiefs of Staff an Integrated Priority List that reflects these requirements. CINCSPACE has a broad set of responsibilities that are quite different in character. He is responsible for protecting and defending the space environment. His responsibilities also include support of strategic ballistic missile defense and the Department’s computer network attack and computer network defense missions.

With the growing dependence on space and the vulnerability of space-related assets, more attention needs to be given to deploying and employing space-based capabilities for deterrence and defense. As space missions continue to expand, space will continue to mature as an “area of responsibility.” All of this will require CINCSPACE to pay more attention to the space tasks assigned by the National Command Authorities, leaving less time for other assigned duties as CINCNORAD and Commander, Air Force Space Command.

Military Services

Each military Service is directed by the Secretary of Defense to execute specific space programs, comply with DoD space policy and integrate space capabilities into its strategy, doctrine, education, training, exercises and operations. Each Service is free to develop those space capabilities needed to perform its mission. However, no single service has been assigned statutory responsibility to “organize, train and equip” for space operations. Eighty-five percent of space-related budget activity within the Department of Defense, approximately \$7 billion per year, resides in the Air Force.

Within the Air Force, space-related activity is centered primarily in four elements. Space systems operations and requirements are organized under Air Force Space Command (AFSPC). Design, development and acquisition of space launch, command and control, and satellite systems are conducted

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by personnel assigned to the Space and Missile Systems Center (SMC) under the Air Force Materiel Command. The Program Executive Officer (PEO) and the SMC Commander, who also serves as the Designated Acquisition Commander (DAC), report to the Assistant Secretary of the Air Force for Acquisition on the cost,

schedule and performance for the programs in their portfolios. The Air Force Research Laboratory, also part of Air Force Materiel Command, conducts advanced technology research.

The Commission heard testimony that there is a lack of confidence that the Air Force will fully address the requirement to provide space capabilities for the other Services. Many believe the Air Force treats space solely as a supporting capability that enhances the primary mission of the Air Force to conduct offensive and defensive air operations. Despite official doctrine that calls for the integration of space and air capabilities, the Air Force does

not treat the two equally. As with air operations, the Air Force must take steps to create a culture within the Service dedicated to developing new space system concepts, doctrine and operational capabilities.

National Reconnaissance Office

The National Reconnaissance Office (NRO) is the single national organization tasked to meet the U.S. Government's intelligence needs for space-borne reconnaissance. The NRO is responsible for unique and innovative technology; large-scale systems engineering; development, acquisition and operation of space reconnaissance systems; and related intelligence activities needed to support national security missions. While the NRO is an agency of the Department of Defense, its budget, the National Reconnaissance Program (NRP), is one part of the National Foreign Intelligence Program (NFIP). The Director of Central Intelligence provides guidance for and approves the NRP and all other elements of the NFIP. The Secretary of Defense ensures implementation of the DCI's resource decisions by DoD elements within the NFIP. As a result, the NRO is a joint venture between these organizations.

The NRO today is a different organization, simultaneously struggling to manage a large number of legacy programs while working to renew a focus on leading edge research.

The NRO had a reputation as one of the U.S. Government's best system acquisition agencies and worked to maintain exceptional systems engineering capabilities. In its early years, the NRO was a small, agile organization, a leader in developing advanced technologies, often first-of-a-kind systems, for solving some of the nation's most difficult intelligence collection challenges. The NRO today is a different organization, simultaneously struggling to manage a large number of legacy programs while working to renew a focus on leading edge research. The NRO's capacity to convert leading edge research and technology into innovative operational systems is inhibited by the requirement to maintain its legacy programs.

3. Intelligence Community

The Director of Central Intelligence is the principal advisor to the President for intelligence matters related to national security and serves as the head of the Intelligence Community. The DCI is responsible for providing national intelligence to the President, to the heads of departments and

agencies of the executive branch, to the Chairman of the Joint Chiefs of Staff and senior military commanders and, when appropriate, to the Congress. “National intelligence” refers to “intelligence which pertains to the interests of more than one department or agency of the government.”

The DCI develops and presents to the President an annual budget for the National Foreign Intelligence Program, which is distributed throughout the budgets of the various departments and agencies that comprise the Intelligence Community.

The Community Management Staff, managed by the Deputy Director of Central Intelligence for Community Management, assists the DCI in coordinating and managing the Intelligence Community, including responsibility for managing resources and collection requirements and assessing space programs and policies. It is also responsible for coordinating policy and budgets with the Office of the Secretary of Defense. The Community Management Staff has made substantial progress in coordinating the planning and budgeting of the components of the Intelligence Community. However, it does not have authority to reprogram in-year money within components, an authority that would enhance its direction of Intelligence Community affairs. Nor is it well structured to coordinate with OSD on broad intelligence policy, long-term space strategy and other issues requiring intelligence support.

4. Congress

Congressional oversight of the authorization and appropriation of national security space funding routinely involves no fewer than six committees. Generally, each committee mirrors the priorities of the executive branch interests it oversees. Executive branch officials must expend considerable time and energy interacting with a large number of committees and subcommittees that, on some matters, have overlapping jurisdiction. To the extent that this process can be streamlined, it would likely benefit the nation, Congress and the executive branch. It would also help if there were an environment in which national security space matters could be addressed as an integrated program—one that includes consideration for commercial and civil capabilities that are often overlooked today.

This report offers suggestions for organizational changes in the executive branch that are intended to bring a more focused, well-directed approach to the conduct of national security space activities, based on a clear national

space policy directed by the President. These organizational changes in the executive branch suggest changes in the Congressional committee and subcommittee structure to align the jurisdictions of these committees as much as possible with the executive branch, leading to a more streamlined process. Congress might usefully consider encouraging greater “crossover” membership among all of the space-related committees to increase legislative coordination between defense and intelligence space programs.

E. Management of National Security Space Activities

A number of issues transcend organizational approaches and are important to the ability of the U.S. to achieve its objectives in space. These are issues that the national leadership, the Department of Defense and the Intelligence Community should address in the near term irrespective of particular organizational arrangements that may be pursued.

1. Interagency Coordination

The present interagency process is inadequate for the volume and complexity of today’s space issues. For the most part, the existing interagency process addresses space issues on an as needed basis. As issues in the space arena inevitably become more complex, this approach will become increasingly unsatisfactory. What may be needed is a standing interagency group to identify key national security space issues, to guide, as necessary, the revision of existing national space policy and to oversee implementation of that policy throughout the departments and agencies of the U.S. Government. The need for a standing interagency coordination process is made more urgent by the fact that there are a number of pending issues on space affairs in Congress, in domestic regulatory bodies and in international trade and arms control negotiating fora. To avoid unintended and deleterious effects on the space sectors, these issues must be addressed in a comprehensive fashion.

2. SecDef/DCI Relationship

No relationship within the executive branch touching on national security space is as important as the one between the Secretary of Defense and the Director of Central Intelligence. Together, the Secretary and the DCI control national security space capabilities. Neither can accomplish the

tasks assigned without the support of the other. The Secretary and the DCI have not given the national security space program their sustained, joint attention for nearly a decade. Nor have the urgent issues related to space control, information operations and the assessment of the threats the nation faces from space received the attention they deserve. The Secretary and the DCI need to align their respective staff offices so that coordination on intelligence issues broadly, and space matters specifically, is easier and more direct between the two.

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3. Acquiring and Operating Space Systems

The Department of Defense and the Intelligence Community acquire and operate most of the satellites used to support defense and intelligence missions. Within DoD, the Air Force is the Service that acquires most of the Department's satellites; the NRO is the acquisition agent for the Intelligence Community's space systems. The acquisition processes used by DoD and the NRO have become similar in recent years. The NRO relies on authorities delegated by both the Secretary of Defense and the Director of the Central Intelligence Agency. By virtue of these authorities, the NRO is able, for some purposes unique to its mission, to award and administer contracts without a number of the encumbrances that affect DoD. Because the use of NRO and Air Force satellites is sufficiently different, the approach to operations in the two organizations is also different in character.

The NRO's approach to acquisition and operations, referred to as "cradle-to-grave," creates a different relationship between the acquirers and operators than that of the Air Force, in which the acquisition and operations elements are in separate commands. With the NRO model, the same individuals are involved in the acquisition and operations processes. Therefore, the experiences and understanding derived from operations can more directly influence satellite design. This is not the case in the Air Force, where the operators have less direct influence. When the operators are on the technical design team, their capacity to resolve on-orbit anomalies is also greater. These differences amount, in essence, to different organizational cultures within NRO and Air Force space activities, an understanding of which is essential to determining whether and how the activities might be integrated over time.

4. Pursuing “Leap Ahead” Technologies

Technological superiority has aided the U.S. military in maintaining its worldwide commitments even as the size of its force has been reduced. As the spread of high technology weaponry on the world market continues, it will become increasingly difficult to stay ahead, particularly in space-related technologies. The Department of Defense needs to provide both resources and direction to ensure that advances in space technology continue. In addition to establishing possible areas for investment, the Department, in cooperation with the space community, needs to ensure that an environment exists within which experimentation and innovation will flourish. The Department also needs to actively coordinate science and technology investments across the space technology community so as to better integrate and prioritize these efforts, many of which have application across all space sectors. And, finally, it needs to encourage demonstration projects, such as Discoverer II was planned to be, if the U.S. is to develop and deploy effective, affordable systems dedicated to military missions in space.

5. Leveraging the Commercial and Civil Sectors

Despite the importance of the U.S. commercial and civil space sectors to the successful completion of the national security mission, the U.S. Government has no comprehensive approach to incorporating these capabilities and services into its national security space architecture. The U.S. Government, as a consumer, a regulator or an investor, is currently not a good partner to the national security space industry. To ensure support for the commercial and civil sectors, the U.S. Government must:

The U.S. Government, as a consumer, a regulator or an investor, is currently not a good partner to the national security space industry.

- Use more expeditious licensing processes while safeguarding U.S. national security interests.
- Develop a strategy for integrating and funding commercial services to meet, as practical, part of current and future national security space requirements.

- Develop a strategy for relying more on commercial launch facilities, toward the goal of largely privatizing the national launch infrastructure.
- Foster multinational alliances to help maintain the U.S. position as a leader in the global space market.

6. Budgeting for Space

Currently, there is no DoD appropriation that identifies and aggregates funding for space programs. Space funding is a part of many appropriations spread across the DoD and Intelligence Community budgets. Most of the funding for national security space is in the Air Force and National Reconnaissance Office budgets. The Army and Navy each fund space programs that are primarily in support of Service-unique requirements. In the Navy's case, funding supports satellite communication and satellite surveillance systems.

These multiple appropriations lead to several problems. When satellite programs are funded in one budget and terminals in another, the decentralized arrangement can result in program disconnects and duplication. It can result in lack of synchronization in the acquisition of satellites and their associated terminals. It can also be difficult for user requirements to be incorporated into the satellite system if the organization funding the system does not agree with and support those user requirements. The current methods of budgeting for national security space programs lack the visibility and accountability essential to developing a coherent program.

Looking to the future, the Department of Defense will undertake new responsibilities in space, including deterrence and defense of space-based assets as well as other defense and power projection missions in and from space. These new missions will require development of new systems and capabilities. Space capabilities are not funded at a level commensurate with their relative importance. Nor is there a plan in place to build up to the investments needed to modernize existing systems and procure new capabilities. Appropriate investments in space-based capabilities would enable the Department to pursue:

- Improved space situational awareness and attack warning capabilities.
- Enhanced protection/defensive measures, prevention and negation systems and rapid long-range power projection capabilities.
- Modernized launch capabilities.
- A more robust science and technology program for developing and deploying space-based radar, space-based laser, hyper-spectral sensors and reusable launch vehicle technology.

Providing the Department of Defense and the Intelligence Community with additional resources to accomplish these new missions should be considered as part of U.S. national space policy.

7. Exercises, Experiments and Wargames

The military uses a variety of tools to simulate warfighting environments in support of exercises, experiments and wargames. However, these tools have not been modernized to take into account the missions and tasks that space systems can perform. As a result, simulation tools cannot be used effectively to understand the utility of space-based capabilities on warfare. Further, the lack of modeling and simulation tools has prevented military commanders from learning how to cope with the loss or temporary interruption of key space capabilities, such as the Global Positioning System (GPS), satellite communications, remote sensing or missile warning information. To support exercises, experiments and wargames, the Department must develop and employ modeling and simulation tools based on measures of merit and effectiveness that will quantify the effects of space-based capabilities.

F. Recommendations: Organizing and Managing for the Future

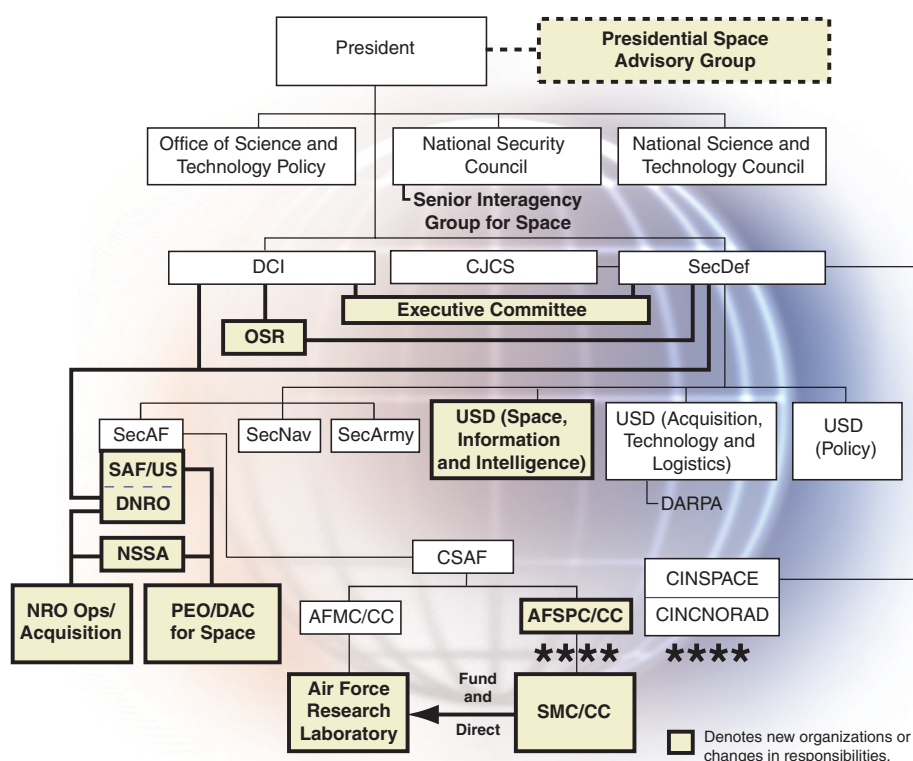
National security space organization and management today fail to reflect the growing importance of space to U.S. interests. There is a need for greater emphasis on space-related matters, starting at the highest levels of government.

National security space organization and management today fail to reflect the growing importance of space to U.S. interests.

In light of the vital place space has in the spectrum of national security interests, a successful approach to organization and management for the future must:

- Provide for national-level guidance that establishes space activity as a fundamental national interest of the United States.
- Create a process to ensure that the national-level policy guidance is carried out among and within the relevant agencies and departments.
- Ensure the government's ability to participate effectively in shaping the domestic and international rules and policies that will govern space.
- Create conditions that encourage the Department of Defense to develop and deploy systems in space to deter attack on and, if deterrence should fail, to defend U.S. interests on earth and in space.
- Create conditions that encourage the Intelligence Community to develop revolutionary methods for collecting intelligence from space.
- Provide methods for resolving the inevitable issues between the defense and intelligence sectors on the priority, funding and control of space programs.
- Account for the increasingly important role played by the commercial and civil space sectors in the nation's domestic and global economic and national security affairs.
- Develop a military and civilian cadre of space professionals within DoD, the Intelligence Community and throughout government more generally.
- Provide an organizational and management structure that permits officials to be agile in addressing the opportunities, risks and threats that inevitably will arise.
- Ensure that DoD and the Intelligence Community are full participants in preparing government positions for international negotiations that may affect U.S. space activities.

The Commission believes that a new and more comprehensive approach is needed to further the nation's security interests in space (Figure 2).



Source: Commission

Figure 2: A New Organizational Approach for Space

Following are the Commission's unanimous recommendations.

1. Presidential Leadership

The United States has a vital national interest in space. National security space should be high among the nation's priorities. It deserves the attention of the national leadership, from the President down.

The President should consider establishing space as a national security priority.

2. Presidential Space Advisory Group

The President might find it useful to have access to high-level advice in developing a long-term strategy for sustaining the nation's role as the leading space-faring nation.

The President should consider the appointment of a Presidential Space Advisory Group to provide independent advice on developing and employing new space capabilities.

3. Senior Interagency Group for Space

The current interagency process is inadequate to address the number, range and complexity of today's space issues, which are expected to increase over time. A standing interagency coordination process is needed to focus on policy formulation and coordination of space activities pertinent to national security and to assure that representation in domestic and international fora effectively reflects U.S. national security and other space interests.

The President should direct that a Senior Interagency Group for Space be established and staffed within the National Security Council structure.

4. SecDef/DCI Relationship

The issues relating to space between the Department of Defense and the Intelligence Community are sufficiently numerous and complex that their successful resolution and implementation require a close, continuing and effective relationship between the Secretary of Defense and the Director of Central Intelligence.

The Secretary of Defense and the Director of Central Intelligence should meet regularly to address national security space policy, objectives and issues.

5. Under Secretary of Defense for Space, Intelligence and Information

Until space organizations have more fully evolved, the Office of the Secretary of Defense would benefit from having a senior-level official with sufficient standing to serve as the advocate for space within the Department. The Secretary of Defense would assign this official responsibility to oversee the Department's research and development,

acquisition, launch and operation of its space, intelligence and information assets; coordinate the military intelligence activities within the Department; and work with the Intelligence Community on long-range intelligence requirements for national security.

An Under Secretary of Defense for Space, Intelligence and Information should be established.

6. Commander in Chief of U.S. Space Command and NORAD and Commander, Air Force Space Command

The Commander in Chief, U.S. Space Command should continue to concentrate on space as it relates to warfare in the mediums of air, land and sea, as well as space. His primary role is to conduct space operations and provide space-related services, to include computer network defense/attack missions in support of the operations of the other CINCs, and national missile defense. This broad and varied set of responsibilities as CINCSPACE will leave less time for his other assigned duties.

The Secretary of the Air Force should assign responsibility for the command of Air Force Space Command to a four-star officer other than CINCSPACE/CINCNORAD.

The Secretary of Defense should end the practice of assigning only Air Force flight-rated officers to the position of CINCSPACE and CINCNORAD to ensure that an officer from any Service with an understanding of combat and space could be assigned to this position.

7. Military Services

The Department of Defense requires space systems that can be employed in independent operations or in support of air, land and sea forces to deter and defend against hostile actions directed at the interests of the United States. In the mid term a Space Corps within the Air Force may be appropriate to meet this requirement; in the longer term it may be met by a military department for space. In the nearer term, a realigned, rechartered Air Force is best suited to organize, train and equip space forces.

The Air Force should realign headquarters and field commands to more effectively organize, train and equip for prompt and sustained space operations. Assign Air Force Space Command (AFSPC) responsibility for providing the resources to execute space research, development, acquisition and operations, under the command of a four-star general. The Army and Navy would still establish requirements and develop and deploy space systems unique to each Service.

Amend Title 10 U.S.C. to assign the Air Force responsibility to organize, train and equip for prompt and sustained offensive and defensive air and space operations. In addition, the Secretary of Defense should designate the Air Force as Executive Agent for Space within the Department of Defense.

8. Aligning Air Force and NRO Space Programs

The Department of Defense and the Intelligence Community would benefit from the appointment of a single official within the Air Force with authority for the acquisition of space systems for the Air Force and the NRO based on the “best practices” of each organization.

Assign the Under Secretary of the Air Force as the Director of the National Reconnaissance Office. Designate the Under Secretary as the Air Force Acquisition Executive for Space.

9. Innovative Research and Development

The Intelligence Community has a need for revolutionary methods, including but not limited to space systems, for collecting intelligence.

The Secretary of Defense and the Director of Central Intelligence should direct the creation of a research, development and demonstration organization to focus on this requirement.

Competitive centers of innovation that actively pursue space-related research, development and demonstration programs are desirable.

The Secretary of Defense should direct the Defense Advanced Research Projects Agency and the Services' laboratories to undertake development and demonstration of innovative space technologies and systems for dedicated military missions.

10. Budgeting for Space

Better visibility into the level and distribution of fiscal and personnel resources would improve management and oversight of space programs.

The Secretary of Defense should establish a Major Force Program for Space.

The Commission believes that its recommendations, taken as a whole, will enable the U.S. to sustain its position as the world's leading space-faring nation. Presidential leadership and guidance, coupled with a more effective interagency process and especially with improved coordination between the Department of Defense and the Intelligence Community, are essential if the nation is to promote and protect its interests in space.

